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A MONTHLY JOURNAL OF

MEDICINE AND SURGERY.

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JANUARY, 1875.

Certainly it is excellent discipline for an author to feel that he must say all he has to say in the fewest possible words, or his reader is sure to skip them; and in the plainest possible words, or his reader will certainly misunderstand them. Generally, also, a downright fact may be told in a plain way; and we want downright facts at present more than any thing else.—RUSKIN.

Original Communications.

ON THE RESEARCHES OF CURRIE AND RECENT VIEWS RELATING TO THE REMEDIAL USE OF WATER.

BY AUSTIN FLINT, M. D.,

Professor of the Principles and Practice of Medicine and of Clinical Medicine in the Bellevue Hospital Medical College.

The remedial use of water from the age of Hippocrates downward forms an interesting fragment of the past history of therapeutics, into which, however, I do not propose to enter. I propose in this essay to give an account of researches made at the close of the last century by a painstaking, able, and conscientious clinical observer, together with recent views relating to the use of water chiefly as an antipyretic measure in the treatment of febrile diseases, adding some testimony based on my own observations.

The use of water externally as a means of diminishing preternatural heat of the body has been studied of late particularly by German physicians. One of the ablest of these, Liebermeister, in his article on typhoid fever in Ziemssen's Cyclopedia of the Practice of Medicine, gives the credit of priority to Currie in these words: "The first result (the direct

cooling of the body by the energetic withdrawal of its heat) is accomplished by means of what is known as the cold-water treatment, which was first systematized and used in febrile affections, according to certain clear indications, by James Currie during the last decade of the eighteenth century. His method, which consisted chiefly in cold affusions frequently repeated, found many followers, and was especially employed in typhoid fever. But for some reason it gradually fell into disuse, and was finally almost forgotten."* Liebermeister attributes the revival of the cold-water treatment, "with the proper degree of system and rigor," to E. Brandin Stettin, who published a work, entitled "The Hydrotherapy of Typhoid Fever," in 1861. He was followed by Jürgensen, who studied the cold-water treatment in the hospital at Kiel, and published a work in which "the results were set forth in an impartial and strictly scientific manner." The appearance of this work, quoting further Liebermeister's language, "marked an epoch in the history of the treatment of typhoid fever." Also, in addition to the article already referred to, Liebermeister has published an essay on the treatment of fevers, according to the use of cold water externally the first rank as an antipyretic measure.† The employment of this measure has by no means been restricted to typhoid fever and other essential fevers, but it has been extended to various acute and inflammatory affections. The cold-water treatment as employed in Germany has been resorted to already to some extent in France, Great Britain, and America. At this moment it holds a prominent place among the potential therapeutic agencies to which clinical inquirers in all countries are directing attention. It is safe to predict that the treatment will soon enter largely into the current medical practice. One tendency of the popular mind toward the potency of water as a remedy for the past twenty years or longer, dating from the rude empiricism of

* American Translation, vol. i, 1874.

† *Sammlung Klinischer Vorträge*, No. 31. Leipsig, 1871.

Priessnitz, has in some measure prefaced the way for its regular and scientific employment. It has been obvious that the so-called "water-cures" and "hydropathic institutions," in which routine methods of treatment are employed, conducted often by ignorant men without discrimination, nevertheless do good together with much harm; in other words, beneficial results are obtained in a certain proportion of cases. Hence some establishments in which water is recognized as a prominent remedial agent are now under regular medical direction, and hydropathy may be said to have become in a certain sense legitimated. It is a curious fact that here, as with regard to another system of practice — namely, homeopathy — there is a seeming relationship between the bastard and the noble-born. There is, however, only the semblance of affiliation; the cold-water treatment as practiced by Brand, Jürgensen, Liebermeister, and others was no more a product of illegitimate hydropathy than was the practice of Priessnitz the offspring of the scientific researches of Currie.

The advocates of the cold-water treatment at the present time employ it purely for an antipyretic effect; the sole purpose is the withdrawal of heat from the body. Currie evidently did not regard its remedial use exclusively in this light; he considered the sudden and powerful impression produced upon the nervous system as especially important; hence the choice of affusion as the mode of its employment. According to recent views, fever — in other words, the preternatural heat of the body — is not merely an effect of morbid processes, but it is causative of functional disturbances, together with important changes in various organs, and it is eminently the source of danger to life. It is the heat of the body which kills, and therefore by the withdrawal of heat serious results may be forestalled and life saved. Under the name "parenchymatous degeneration" Liebermeister describes changes in the liver, kidneys, muscular tissues of the heart, vessels, blood, voluntary muscles, brain, and other parts of the nervous

system, salivary glands, pancreas, spleen, and the medulla of the bones, as direct effects of prolonged high temperature in fever, whether essential or symptomatic. This is quite in opposition to former views, which held that fever was a salutary reaction conducive to restorative actions. The study of the temperature of late years by means of the thermometer has led to fever being regarded as a secondary cause of disorder, lesion, and death. The value of this instrument in diagnosis, prognosis, and therapeutics is now so apparent that we can not but wonder at its being in our day a novelty in practice; yet, as will be seen presently, Currie did not overlook its value in connection with the remedial use of water.

In the antipyretic treatment by water the German authors who have been named employ usually the bath at a temperature of about 68° F., the duration of the bath averaging about ten minutes. They consider it indicated whenever the thermometer in the axilla shows a temperature of 102° F.; and it is to be repeated as often as the temperature, after having been reduced, again reaches that height. Following this rule, baths are sometimes repeated every two hours; and Liebermeister states that in some cases of fever the number of baths during the career of the disease has amounted to two hundred. In order to avoid the unpleasant impressions of cold, to which Currie seemed to attach especial importance, Ziemssen recommends that at the outset the bath should have a temperature of 95° F., and be gradually cooled by the addition of cold water. I do not go into further details, inasmuch as this method of treatment is fully described in works readily available, and in articles which have appeared in our medical journals.* What are known as "cold packs" are considered to be a substitute for the baths for feeble patients and for children. Cold sponging of the body, even with ice-water, can never take the place of either baths or the packs. I shall

* *Vide* article on the Antipyretic Treatment of Fever, by Leroy M. Yale, M. D., New York Medical Journal, November, 1874.

presently state a method of employing the "packs" which will, as I believe, render them in all cases quite as efficient as baths, with much less inconvenience to both patients and attendants.

The study of the antipyretic operation of the cold-water treatment manifestly involves the mechanism of the production of heat within the body in health and disease, together with the laws which regulate the uniformity of the normal temperature. Recent views relating to these topics possess interest and importance, but they do not come within the scope of this essay, and I shall now proceed to give an account of the clinical researches of Currie.*

Currie's publications were by no means still-born; they were received with much consideration by his contemporaries. His method of practice was adopted to a considerable extent in Great Britain and in other countries, and there was abundant testimony in its behalf; yet after a few years it passed almost entirely out of medical practice. It was not altogether lost sight of. Trousseau, for example, in his *Clinique Médicale*, advocated it in cases of scarlet fever on the basis of his own large experience. Most authors on practice and therapeutics have referred to it, but generally as a measure which had become obsolete. I will venture to say that during the last half century very few have read his writings. I confess that I had not read them prior to a couple of years since, when from curiosity I obtained his book, entitled "Medical Reports on the effects of water, cold and warm, as a remedy in fever and other diseases, whether applied to the surface of the body or used internally."

This book (a duodecimo of four hundred and thirty pages) consists of two volumes in one, the second volume having been issued six years after the publication of the second

* *Vide* monograph by Liebermeister in Volkmann's Collection, No. 19, entitled *Ueber Wärmeregulirung und Fieber:* also *Untersuchungen über den Fieberhaften Process und Seine Behandlung, von Dr. H. Senator.* Berlin, 1873.

edition of volume i. The first volume appeared in 1797, and the copy which came into my hands was a republication issued in Philadelphia in 1808. I read the book with great interest. I was greatly impressed with the value of the clinical observations which it contains. The book bears intrinsic evidence of the accuracy and good faith with which his researches were conducted and reported. The simplicity and candor which belongs to a truly philosophical mind, together with a spirit of philanthropy, pervade his writings. It is indeed a charming book, and ever since my perusal of it I have felt a desire to make it the subject of an essay for a twofold object; namely, first, to give an account of the author's researches, which, if we repudiate (as I think we should do) the doctrine that during the nineteenth century either diseases have radically changed or the human constitution has altered, are as valuable to-day as at the date of their publication; and second, to pay a tribute of respect to the memory of one whose labors entitle him to lasting honor.

Currie made no claim to having originated the method of treatment which he studied. He takes pains in the first paragraph of the first chapter of his work to attribute his determination to make trial of the treatment to an article, by Dr. William Wright, in the London Medical Journal for the year 1786, and he devotes the first chapter to the narration of Dr. Wright's personal experience of the treatment. From a desire apparently that Dr. Wright should have all the credit of priority, a biographical sketch is subsequently introduced. Following Dr. Wright's plan, Currie resorted to the treatment for the first time on the occasion of the prevalence of continued fever in the Liverpool Infirmary. The second chapter of the work is devoted to an account of this fever and the result of the treatment. The treatment was employed in seven cases, all of which ended in recovery. Quoting his language, "from this time forth I have constantly wished to employ the affusion of cold water in every case of the low contagious fever in

which the strength was not already much exhausted, and I have preserved a register of one hundred and fifty-three cases in which the cure was chiefly trusted to this remedy." . . . "Of late I have not thought it necessary to register all the cases in which this remedy has been employed. Having satisfied myself of its extraordinary efficacy, and of the precautions necessary in using it, I have found it the shorter method, as well as the more instructive, to record the instances in which it has proved unsuccessful. To detail the whole of my experience would be a tedious and useless labor." In chapter 3 he gives an account of a continued fever which prevailed in a regiment of troops in Liverpool. The epidemic "extended to fifty-eight persons in all, of whom thirty-two went through the regular course of the fever, and in twenty-six the disease seemed to be cut short by the cold affusion. Of the thirty-two cases two died. Both of these were men whose constitutions were weakened by the climate of the West Indies; both of them had been bled in the early stage of the fever; and one of them being on the twelfth and the other on the fourteenth day of the disease when I first visited them, neither of them was subjected to the cold affusion. The water employed on this occasion was taken up from the river Mersey, close by the fort. It was at that time of a temperature from 58° to 60° F., and it contains in solution from a thirty-second to a thirty-third part of sea-salt."

From this extract it is seen that of fifty-six cases in which the cold affusion was relied upon recovery took place in all, and in nearly one half of the cases the disease was apparently cut short. In chapter 5 he gives cases illustrative of the employment of the affusion of cold water in the different stages of typhus fever. A nurse in the fever-ward of the infirmary was subjected to affusion sixteen hours after the attack. Six hours afterward she was perfectly free from fever, and it did not return. In connection with the account of this case he says, "During the progress of fever when epidemic a great

number of cases similar to the above have occurred in which the disease was suddenly cut short by the use of the cold affusion on the first and second day." . . . "In each instance the result was so precisely similar to what occurred in the case I have related that it would be to no purpose to detail them. In cases in which the affusion was not employed till the third day of fever I have seen several instances of the same complete solution of the disease. I have even seen this take place when the remedy had been deferred till the fourth day, but this is not common." Three cases are then detailed, with the following conclusion: "Thus it appears that the cold affusion used on the third and fourth days of fever does not usually produce an immediate solution of the disease, but that it instantly abates it, and by a few repetitions brings it to a happy termination in two or three days." Three cases are next detailed to illustrate the result of affusion employed on the seventh or eighth day of the fever. The duration of the fever after the treatment was employed was in one case three days, in another case six days, and in the third case nine days.

Continuing to direct attention to those portions of the work which contain clinical facts or statements in relation to the use of cold water, in chapter 9 the author details an illustration of its successful employment in small-pox. Its employment in six or seven cases during the fever which precedes the eruption was followed by an instant abatement of the symptoms, however severe, "and the disease assumed a benignant form."

In chapter 13 the use of the cold bath in convulsive diseases is considered. Six cases of traumatic tetanus are given, and the author's conclusion is, "These cases afforded little inference either in favor of or against the use of the cold bath in tetanus arising from wounds." He states, "In the convulsions of children I have found the cold bath a most useful remedy, whether the disorder originates in teething or other

causes. I have seldom known it to fail in stopping the paroxysms, at least for some time, and thereby giving an opportunity of employing the means fitted to remove the particular irritation. I must, however, observe that in early infancy I have used it with caution, and generally by affusion, tempering the water when the weather was cold." He says, "In chorea sancti viti I have tried it frequently, but never found it of any service;" and he adds, "This is one of the few diseases in which electricity is of decided advantage." The following quotation relates to epilepsy: "I have used the cold bath during the paroxysm in various instances, but in general without the patient being roused to consciousness or sensation, and without advantage." Of hysteria he says, "In the hysteric paroxysm the cold bath, or indeed the plentiful affusion of cold water, is an infallible remedy." In connection with some general reflections on insanity the author gives an account of a case of furious paroxysmal mania brought on, as supposed, by excessive drinking. After the trial of opium, digitalis, Peruvian bark, emetics, and the tepid bath without success, the cold bath was resorted to. The following is the account of its employment: "Having in mind the success of the cold bath in convulsive diseases, I ordered it to be tried on the present occasion. The insanity returning with great violence on the 21st, he was thrown headlong into the cold bath. He came out calm and nearly rational, and this interval of reason continued for twenty-four hours. The same practice was directed to be repeated as often as the state of insanity recurred. On the morning of the 23d he was again thrown into the cold bath in the height of his fury as before. As he came out he was thrown in again, and this was repeated five different times, till he could not leave the bath without assistance. He became perfectly calm and rational in the bath, and so remained, being discharged some time afterward in perfect health of body and mind."

Before passing to analyze the second volume with reference

to the clinical experience which it contains, there are certain points connected with the use of water which claim attention.

Currie's observations were not limited to cold affusion. In the cases of convulsive affections, and in the case of insanity just referred to, he employed the cold bath. He employed also affusion of tepid water. With regard to the latter he found that the heat of the body was lowered in some cases more speedily by it than by the cold affusion. This statement, he says, "will appear paradoxical to those who reason respecting the heating and cooling of the living body in the same manner as respecting inanimate matter, but I assert it from actual observation." His explanation in part was the evaporation from the surface is greater after the tepid affusion; "but," he adds, "this is not all; the tepid affusion is little if at all stimulating, and does not, like the cold affusion, rouse the system to those actions by which heat is produced and the effects of external cold are resisted." Here is a foreshadowing of the point which is much dwelt upon by Liebermeister; namely, that an effect of the cold bath is to occasion an enormously increased production of heat within the body. In the recent views it is considered that, inasmuch as this increased production of heat represents a proportionate increase of the waste of the tissues, it may sometimes prove to be an evil result. Currie regarded the tepid affusion as "applicable to every case of fever in which the cold affusion is recommended, and those may receive much benefit from it whose fears or whose feebleness deter them from that energetic remedy." He states, however, that he has not found its effects so permanent as those of the cold affusions, and he has never seen it followed by the total cessation of fever. He considered it especially applicable to paroxysms of hectic fever. He used also the affusions of cool water; *i. e.*, of a temperature from 87° to 75°. Sponging or wetting the body with cold or warm vinegar or water he regarded as beneficial in an inferior degree to the cold or tepid affusion; and,

according to his experience, it is not only less effectual, but in many cases less safe; "for," quoting his words, "the system will often bear a sudden, a general, and a stimulating application of cold when it shrinks from a slow and successive application."

He preferred either sea-water or water to which salt is added, on account of the stimulating effect on the vessels of the skin; but he often used fresh water. The temperature of the water for the cold affusion was from 40° to 50° F. The method of employing it was to pour over the naked body a bucketful or from four to five gallons, the patient being immediately dried with towels and replaced in bed. The immediate effects were the reduction of the heat of the body frequently to the normal temperature, and a reduction of the pulse often from twenty to forty beats per minute, with relief of headache and other symptoms belonging to the febrile state. An abundant perspiration was common, followed by refreshing sleep. If the disease were cut short, of course the apyrexia was permanent; but if after several hours the heat of the body, the pulse, and other symptoms denoted a return of the fever, the affusion was repeated; and if not contra-indicated, the treatment was continued daily as long as the fever lasted. The exacerbation of fever usually being in the evening, this was considered to be the best time for the affusions. If the symptoms denoted much debility directly after the affusion, some warm wine was given. The formula laid down by Currie was that the cold affusion may at all times be safely used "when there is not sense of chilliness present, when the heat of the surface is steadily above what is natural, and when there is no general or profuse sensible perspiration."

I come now to a highly interesting fact connected with Currie's observations. He appreciated fully the importance of measuring the heat of the body with the thermometer. In the dedication of his volume to Sir Joseph Banks he says,

"About eighteen years ago, when I was at Edinburgh, it fell to my lot to write a paper on the influence of cold on the living body for one of the societies of students of which I was a member. In defending my speculations against some ingenious opponents a perpetual contradiction occurred as to facts, which a reference to original authorities did not enable me to remove; for I discovered that the accounts given of the temperature of the human body under disease, even by the most opposed authors, are, with a very few exceptions, founded not on any exact measurement of heat, but on the sensations of the patient himself or his attendants. Impressed with the belief that till more accurate information should be obtained respecting the actual temperature in different circumstances of health and disease no permanent theory of vital motion could be established, nor any certain progress made in the treatment of those diseases in which the temperature is diminished or increased, I have occasionally since that time observed and recorded such facts as related to the subject, intending one day or other to lay my observations before the public, if they acquired an importance that deserved attention. In the outset of this undertaking nothing seemed wanting but accurate thermometers and a moderate portion of time and attention, and I embraced in imagination the whole effects of temperature upon health and disease; a range of inquiry which experience has convinced me it would be temerity and folly to hope to go through." With this appreciation of the importance of the thermometer in physiological and pathological investigations, had not his modesty led him to feel inadequate to the task, Currie might have rendered superfluous the recent labors of Wunderlich! In his observations on the remedial use of water, however, the thermometer was brought into requisition hardly less than at the present time. In proof of this statement I shall cite several extracts. Speaking of cold affusions, he says, "Neither ought to be used when the heat, measured by the thermometer, is less than or only

equal to the natural heat, though the patient should feel no degree of chilliness." Again, "In taking the heat of the patient I have generally used a small mercurial thermometer of great sensibility, with a movable scale, after a form invented by the late Mr. Hunter, and used by him in his experiments on the heat of animals; and I have introduced the bulb under the tongue with the lips close or under the axilla indifferently, having found by repeated experiments that the heat in these two places corresponds exactly, and gives a just indication of the heat of the surface of the body where sheltered by the necessary teguments from the contact of the external air. Finding, however, considerable risk in using the straight-tubed thermometer in contagious diseases, I got some instruments of this kind made with a small bulb and curved at the end. The bulb being introduced under the tongue or the axilla, the observer can stand behind the patient and mark the rise of the mercury without coming into the immediate sphere of his respiration. Though no injury was in any case incurred from the use of this thermometer, yet a farther improvement has suggested itself. By introducing a small piece of iron into the tube, after the manner of Mr. Six, a permanent indication of the greatest heat is obtained, and the approach of the observer toward the patient during the experiment is rendered unnecessary." Thus it is seen the curved axillary self-registering thermometer of the present day was anticipated by Currie. In his details of the symptoms in the cases which he gives the thermometric temperature before and after the cold affusion is always stated. After having reported in full a case of small-pox he apologizes as follows: "If this case be more detailed than seems necessary, let this be excused, as it is the first in which the actual heat in confluent small-pox has been recorded. It is here given accurately from the period when the disease came under my care."

I pass now to the second volume, and I find that with a due regard to the length of this essay I must restrict the

analysis to narrow limits, confining myself to facts and statements bearing directly on the remedial use of water. This volume opens with the following statement: "In the six years which have elapsed since the publication of the second edition of the first volume I have invariably employed the affusions of water, cold and tepid, in the diseases pointed out in the original publication, and I have extended it to some others of which I shall afterward speak. Its success has equaled my expectations. I have nothing to detract from the accounts I have formerly given of its efficacy. I repeat that, used in the three first days of fever, the cold affusion very generally stops the disease; that the same happy effect sometimes follows its use on the fourth or even fifth day, but seldom later; that even in the subsequent stages, when the heat continues preternaturally great and the skin dry, it is of manifest advantage, almost immediately relieving the most distressing symptoms, particularly restlessness and delirium, and conducting the disease to a safe and speedier issue. The tepid affusion is, as I formerly observed, applicable to all the diseases to which the cold affusion is applicable, and possesses very considerable though inferior efficacy. I find it, however, very safe, easy of application, and in a high degree grateful, and I have extended it to almost the whole class of febrile diseases. In my practice the cold and tepid affusions are very often combined in the same disease. While the heat is great, the skin dry, and the vascular action strong, I use water perfectly cold; when these symptoms diminish I use it cool; and as they subside still further I make it tepid."

The author proceeds to state that in 1801 he used affusions in continued fever with "less striking advantage than on former occasions," which he attributes to the disease having been of a graver type. He lost, however, but two out of twenty-three cases; a rate of mortality which would not in our day be considered as showing any want of success. He gives an account in detail of the two fatal cases. In these twenty-

three cases he used generally either the cool or tepid affusion. He details the additional fatal cases of fever in 1803, in which the treatment was relied upon. He then says, "I have thus related all the instances which have occurred to me since the last edition of this volume (a period of five years of extensive and attentive observation) in which the affusion of water on the surface of the body, cold or tepid, proved either less beneficial in its effects in fever than I had formerly represented it, or entirely unsuccessful. I would add, if any such had occurred, the instances in which the remedy had appeared to be injurious. But experience has suggested to me no instance of this kind; and, extensive as my employment of the affusion has been, I have never heard that it has suggested even to the fears or prejudices of others a single occasion of imputing injury to the remedy. If I were to detail in the same manner the evidence in its favor which has occurred to me during the same period of time, it would occupy many volumes. In the months of September and October, 1803, twenty cases of fever occurred in my private practice, in all of which the affusion of water was employed with success, having either cut short the disease or conducted the patient in safety through it. It is true in all these cases other remedies were used, for it would be unjustifiable for the sake of experiment to neglect any means of safety; yet these remedies were of the most simple kind—saline draughts, small doses of laudanum, and mineral acid drinks, with milk, gruel, and occasionally wine. In the use of all these remedies, and particularly of opium and wine, the strictest attention was paid to the heat of the patients, without which he who undertakes the treatment of fever seems to me to walk in darkness."

It is to be remarked that the cases of continued fever treated by Currie probably embraced examples of both typhus and typhoid fever, the distinctions which are now known to exist between these two fevers not having been then pointed

out. There is reason to think, moreover, that a disease which he describes as a fever differing from both the typhus and the synocha of Cullen may have been acute pneumonia.

As regards the phlegmasiæ and the hemorrhagiæ, he states that he was the less anxious to extend to them the use of the cold affusion, "because a remedy has lately presented itself that greatly enlarges our power over the numerous diseases which are arranged in these orders; I mean the digitalis purpurea." It is a curious coincidence that they to whom we are especially indebted for the recent views relating to the remedial use of water have also revived the employment of digitalis as an antipyretic remedy.

The second volume contains the author's experience of the cold affusion in scarlatina. His method of using it when a high temperature first appears is described in the following language: "The plan that I follow, if called in at this early period, is to strip the patient and dash four or five gallons of the coldest water to be procured over the naked body. This produces its usual cooling effects; but these are less permanent than in typhus. In one or two hours afterward the heat is often found as great as before; the affusion is therefore repeated again and again, as the obstinacy of the heat may indicate. It is sometimes necessary to use it ten or twelve times in twenty-four hours. At the end of this time, but commonly earlier, the force of the fever is broken, and a few tepid affusions at longer intervals are sufficient to subdue it entirely. During this time cold water and lemonade should be used as drinks, and the bowels opened, if necessary, by calomel. In a few cases I have thought it advisable to assist the affusion by the diaphoretic power of a solution of the tartrate of antimony. If left to myself, I use no other means."

The narrative of cases occurring in his own family is of so much interest that I can not forbear quoting it in full: "In the years 1798, 1799, and 1800 several cases of scarlatina occurred, in which I employed cold and tepid affusions,

according to the degree of heat and the stages of the disease, with very general success. I was fully prepared therefore for the treatment of the wide-spreading and fatal epidemic which broke out in the latter end of the summer of 1801. My family was at that time in the country, where it was seldom in my power to visit them. The scarlet fever had appeared among the children in their vicinity and carried off several. My two youngest children, who had not had the disease—both boys, one five and the other three years of age—had been in company with some of these children at play, and had been exposed to the contagion. I gave directions that they should be watched narrowly, and that I should have intimation of the first appearance of complaint. On the morning of the 15th of August a message was sent me that the eldest of the two had been restless and uneasy in the night, with feverish chills and pain in the head and back. I saw him in seven hours from the first of these chills. He was then becoming hot, and had vomited up his tea; his face and neck were beginning to flush, and it was evident that he was attacked by scarlatina. His younger brother had constantly slept in the same room with him. Though then walking about, he was evidently spiritless and languid, and there was little doubt that he had also caught the disease. In a little while the eldest boy became very hot, and the youngest sick and restless. He followed his brother, step by step, at the distance of about seven hours. The heat of the eldest soon raised the thermometer to 106°, 107°, and 108°, and in both the symptoms prognosticated a violent disease. I had lost a girl of four years of age in scarlatina a few years before, though her first symptoms were far less violent. She perished in consequence of the ulcerations extending to the epiglottis and larynx and producing the symptoms of genuine croup. I shut myself up with these boys, and with plenty of pump-water and a pocket-thermometer prepared, not without anxiety, to combat this formidable disease. It would be tedious

and useless to go into details. As soon as the sensation of heat was steady in my eldest boy I stripped him naked, and poured four gallons of water over him of the temperature of 64° F. The usual good effects immediately appeared, but at the end of two hours he was as hot as ever. The remedy was again applied and repeated as the return of heat indicated. By the time the eldest was ready for his third affusion the youngest was ready for his first. The heat rose in the eldest to 109°, in the youngest to 108°, and the pulse in each was upward of 150. In thirty-two hours the first had the affusion fourteen times—eight times cold, twice cool, and four times tepid. Twelve affusions sufficed in the case of the youngest, of which seven were cold. The fever was in both completely subdued. On the morning of the third day they were both evidently safe; and on the morning of the fourth, though the pulse was still a little more frequent than natural, they were both convalescent. In this state they continued to sleep and rest. The scurf-skin peeled off them both, and each had a slight degree of swelling in the hands, but none of the other secondary symptoms."

The general result of his treatment of scarlatina is thus stated: "This disease continued prevalent during the autumn of 1801, and throughout the succeeding winter and spring; and, though less frequent since, it may be said to have been constantly present in Liverpool, in a greater or less degree, up to the present time. In all the cases which I have seen during this period, amounting to upward of one hundred and fifty, I have uniformly followed the practice which I have just described, and with a degree of success so nearly invariable that I can not contemplate it without emotions of surprise as well as satisfaction."

In the second volume of Currie's work is introduced much testimony of the success of the treatment in the hands of others. Communications were received from different parts of Great Britain, from practitioners in Minorca, Egypt, Persia,

India, St. Domingo, Abyssinia, and numerous other countries, including America. Officers of the British navy testified to the success of the treatment on shipboard. Volume I contains, in addition to the author's experience, chapters with the following captions: "General remarks on fever;" "An account of the remarkable effects of a shipwreck on the mariners;" "General view of the doctrines respecting fever;" "Animal heat;" "Is there an inhalation by the skin?" "Population of Liverpool and prevalence of fever among the poor." In the consideration of topics embraced under these captions experiments are introduced which at this day are of value in connection with physiological investigations.

I shall conclude my analytical review of the book by quoting the concluding sentences, to which the author affixed his initials in 1805. They breathe a philosophical spirit worthy of imitation by the writers of the present period. "Having had an apparently hazardous, but in my judgment a highly salutary, medical practice to recommend to the world — a practice contradictory to long-established and almost universal prejudices—I reflected beforehand with the utmost seriousness on the duty imposed on me to avoid in my manner of presenting it all possible grounds of offense. If my matter was alarming, if my object was bold, I have endeavored to make my manner calm and temperate. The claims of my contemporaries to merit on this occasion, so far as I was acquainted with them, I have studiously brought forward. I have been desirous of treating them not merely with justice but generosity; and many series of experiments which I myself have undertaken, and I may say undergone, especially in investigating the effects of perspiration on animal heat, I have suppressed in the detail and only given in the result. In a word, it has been my endeavor to suppress all personal considerations and all petulant expressions; where I could employ the authority of others, to do it freely and respectfully; and where I have been led by my subject to controvert

opinions before the world, to use the language of civility and candor. By these means I have endeavored to disarm personal opposition and to avoid controversy; controversy which some philosophers have invoked, but I think unwisely, and which on a science so imperfect, so important, and so difficult as that of medicine seems to me to have almost uniformly invoked consequences of an injurious and melancholy nature. On the whole my endeavors have been successful. I have encountered little opposition; I know not that I have provoked any man's enmity; while the medical writings of the day, both in Britain and America, bear evidence that considerable changes have been effected and are effecting on the opinions of medical men, quietly and insensibly, on points of no mean importance in physiology as well as in practice."

What are the points of similitude and contrast when the recent views are compared with those of Currie?

An object common to both is the reduction of the preternatural heat of the body. In the recent views this is the only immediate object, and the curative influence is attributed exclusively to the abstraction of heat. Currie held that an effect was produced, in addition to the withdrawal of heat, by a curative impression which he did not undertake to explain. He seems to have regarded the reduction of the heat of the body not so much as the means as the criterion of a curative influence. In both the same indications for the employment of water are recognized; in both there are the same efficiency and boldness in the treatment.

In the mode of employment there is a contrast, namely, between affusion and the bath. Currie evidently attributed to the affusion a much greater remedial efficiency than that belonging to the bath. The efficiency as an antipyretic which he attributed to tepid affusion is worthy of note, inasmuch as this is divested of the harshness which is an objection to the cold affusion.

In both the importance of the measurement of heat by the thermometer in determining the indication for and the effect of the treatment is alike appreciated, the fallacies incident to judging of the temperature by the touch or by the feelings of the patient being equally recognized in both.

Currie's researches did not extend to inflammatory affections, whereas in accordance with recent views the abstraction of heat is an object of treatment alike in symptomatic and in essential fever. Currie, however, was not opposed to the application of the treatment to acute inflammations; on the contrary, he was in favor of it, but he did not embrace this application in his researches.

Currie aimed to cut short fevers, and his success in this respect seems to have been remarkable. The treatment, according to recent views, has not so much reference to this object as to the diminution of the intensity of the disease and of danger. It is not claimed in behalf of the modern treatment that it generally or often cuts short febrile diseases. The contrast in this respect is striking, and suggests the inquiry whether it may not be true that the use of water by affusion has a potency as an abortive measure of treatment which does not belong to the bath. Finally, the use of the cold bath after the practice of Liebermeister and others of the German school at this day is as much at variance with — or, if the expression be admissible, in advance of — the usual treatment of the essential fevers and acute inflammations as was the employment of cold affusions in Currie's time. The cold-water treatment, according to the recent views, is essentially a revival of a therapeutical measure which was in vogue three quarters of a century ago, and which had become well-nigh obsolete; but, so far from detracting from its merits, this fact is perhaps evidence of its value.

What I have to say concerning the remedial use of water, based on my own observations, must be said in a few words. This will not be difficult, inasmuch as my experience of its

use is much more limited now than it probably will be some time hence, if life be spared.

The employment of the wet pack after the method formerly if not now practiced at certain hydropathic institutions of this country—namely, the naked body enveloped in a sheet saturated with cold water and then covered with blankets — is not reckoned as an antipyretic measure. The cold impression or shock is followed quickly by reaction, and usually by an abundant perspiration. A secondary effect, however, is often a diminution and sometimes even the complete disappearance of fever as denoted by the pulse, coolness of the surface, and other symptoms. In 1850 I resorted to this measure in a few cases (five) of continued fever early in the disease, in order to study its operation. At that time the thermometer had not come into medical use, and I can not refer to data showing measurements of temperature before, during, and after the employment of the measure. It were desirable to have such data. In the first of the few cases in which I resorted to the measure the speedy change in the condition of the patient was remarkable. Prior to the wet pack there was high febrile movement and delirium. He remained in the pack four hours. Copious diaphoresis followed; he passed a comfortable night, and on the morning of the next day he appeared to be completely free from fever. I was delighted with the apparent success of the treatment. In the afternoon I was summoned to see him, and found him in a state of coma. He died during the night following. I ascertained that after my morning visit he felt so well as to insist upon dressing himself and sitting up for a time. On returning to bed he became unconscious without any previous unfavorable change in the symptoms having been observed. The urine had not been examined, there was no autopsy, and so the sudden coma was not accounted for. It probably could not with propriety be attributed to the treatment; but owing to the unfortunate termination of the case I was deterred for some time from again resorting to it,

notwithstanding the immediate apparent effect was to render the fever abortive. Of the other cases the measure was in none followed by any unpleasant consequences. In one of these cases complete cessation of fever followed, and in all the symptoms denoted manifest improvement.* I have resorted to this measure repeatedly in scarlet fever, and always with advantage, without, however, in any instance cutting short the disease. Other practitioners in this country have employed it and borne testimony to its value. I would especially refer to a paper, by Dr. R. W. Mathewson, advocating its use in scarlet fever, contained in the proceedings of the Connecticut Medical Society for 1864.

The wet pack for direct prolonged refrigeration is employed in a different manner. This did not enter into Currie's researches, but it is one of the methods of the modern antipyretic treatment with cold water. The naked body is enveloped in a sheet saturated with cold water, the patient remaining without any other covering until the desired amount of cooling is obtained. I have already alluded to a mode of rendering this measure not less potential than the cold bath. This is done by sprinkling the sheet, covering the body with cold water as fast as the water with which the sheet is saturated acquires warmth from the body. Another less efficient mode is to promote evaporation by producing a current of air over the body by means of a large fan or a pair of bellows. By the first of these modes I believe all the advantages of the cold bath, together with a measure of whatever additional advantage may belong to the cold affusion, may be obtained, with much less fatigue to the patient and inconvenience to the other souls.

I have had a considerable opportunity of observing this mode of refrigeration in cases of insolation or thermal fever. In 1872, having charge of all the medical wards in Bellevue

* For a detailed account of these cases *vide* Clinical Reports on Continued Fever, by the author, published in 1852.

Hospital, in the months of July and August, an unusual number of cases of insolation having been received during that season, I gave the following directions: in all cases in which the axillary temperature was 104° or upward the patient to be enveloped in a sheet wet with cold water and placed on blankets covered with india-rubber cloth; cold water to be applied over the whole body from a sprinkling-pot at intervals of a few moments, and this to be kept up for a period of half an hour or much longer, according to the effect on the temperature, pulse, and other symptoms; this treatment to be repeated as often as the temperature again rises. These instructions were faithfully carried out, and the treatment has been employed in many if not most of the cases which have occurred during the two subsequent years. I believe I am warranted in saying that it has proved more successful than any other plan of treatment, and in some cases the apparent success was very striking. I have given in another place an abstract of a case which I will now quote. "A patient, admitted at two P. M., unconscious, pupils contracted, pulse 150, breathing stertorous, the axillary temperature 110½°, and the body cyanosed, was at once placed in the wet sheet and sprinkled. At half past four P. M. the temperature in the axilla had fallen to 104¾°, the frequency of the pulse and the cyanosis persisting. He was taken out of the sheet, dry cups were applied to the chest, and at five P. M. the sheet was again applied and continued until fifteen minutes after seven P. M. The temperature was then 101⅛° and the pulse 120. At 9:45 P. M. the temperature fell to 100¾°. About midnight he became conscious. Progressive improvement followed, ending in recovery. The only additional measures employed up to the restoration of consciousness were an enema containing castor-oil, with a few drops of croton-oil, and the hypodermic injection of ten minims of the tincture of digitalis."* For the details of this treatment I would refer

* Practice of Medicine, fourth edition, page 623.

to a report of fifty-five cases treated in Bellevue Hospital in July and August, 1872, prepared at my request by Dr. Ratzenbach, at that time house physician, published in the New York Medical Journal in January, 1873.

In a paper read at a stated meeting of the New York Academy of Medicine, October, 23, 1873, on the antipyretic treatment of fever, Dr. L. M. Yale refers to a case in private practice in which this plan of treatment was pursued. I was associated with him in the management of that case, and it was one of much interest in connection with the measure under present consideration. The type of fever was remittent, the daily exacerbations characterized by a very high temperature (105°, 106°, 107°, and toward the last 109° F.) Quinine in large doses failing to arrest the disease, the wet sheet was employed as in the treatment of insolation daily for a period of from ten to thirty minutes, and was always followed by a reduction of temperature, together with an amelioration of other symptoms. These short packs were repeated in a week thirty-five times. The case ended fatally, and an examination of the body revealed, so far as gross appearances are concerned, no lesions to account for death. I could not forbear the reflection that had the antipyretic treatment been pushed more vigorously—that is, the packs continued much longer—the patient's life might perhaps have been saved.

I have resorted to the wet sheet in the manner just described, in one case of acute articular rheumatism, with apparently marked benefit.

I have as yet had no experience of the cold-water treatment, except locally, in acute inflammations. I have made trial of the local application to the chest of cloths dipped in ice-water and renewed at short intervals, in some cases of pneumonia, as recommended by Niemeyer, but my experience is too limited to warrant any expression of opinion as to the merits of this method of treatment.

In conclusion I will offer a very few remarks on the use

of water internally as a remedial measure. Currie devoted a chapter of his first volume to "the internal use of cold water in fever." Although recommended by Hippocrates, Galen, Celsus, and others of the ancient physicians, lauded by some English writers in the early part of the eighteenth century as an almost universal remedy under the name *febrifugum magnum*, and in Spain and Italy, at the same period, having in a great measure, superseded medicine, the use of cold water in fever was opposed by Boerhaave and Van Swieten on the ground that, the course of fever being a lentor of the blood, warm drinks were more appropriate. As Currie says, "These learned theorists prevailed in their day over the voice of nature." Pringle, Cleghorn, and Lind, who wrote of fevers, had nothing to say in behalf of the internal use of cold water, and Cullen did not recommend it. "On the whole," Currie continues, "the use of cold drinks in fever is contrary to modern practice, and where it is occasionally given it is administered with caution, and rather permitted than enjoined." Popular belief, which here as in other instances was doubtless derived from the opinions of medical men, has within our day been adverse to cold drinks in febrile diseases. Within my professional recollection, to allow patients to drink cold water freely was considered dangerous in the extreme. The craving for it was met by warm liquids, and even these were given sparingly. This belief is not yet extinct, and it is not uncommon for medical men to enjoin a needless reserve in the use of cold drinks. Currie's work is open to criticism on this point. He advocates the free use of cold drinks from an examination of its effects, as he says, with the thermometer in his hand; but he thought it was to be forbidden whenever there was any sense of chilliness or profuse perspiration. He was needlessly cautious in these restrictions. He touched the true principle when he said that learned theorists prevailed over the voice of nature. It is evidence of need when the voice of nature calls. Thirst and the desire for cold drinks

express a want more reliable as a guide for treatment in disease than any doctrinal or theoretical opinions; and if the gratification of the want be followed by an agreeable sense of satisfaction, as a rule the ulterior effect will be good. A sufficiency of cold liquids in all febrile affections, the quantity regulated by the feelings of the patient and not by any abstract rules, belongs in the category with an abundance of pure air and an adequate amount of aliment. Air, food, drink—these form the tripod whence emanate hygienic laws for the management of fever, whether essential or symptomatic. I must content myself with these aphoristic assertions without discussing either the *modus operandi* of cold as thus employed or the *rationale* of the usefulness of the ingestion of liquid.

The internal use of water as a remedial measure, irrespective of the action of cold, in various affections is a topic on which, if time permitted, I should be glad to enlarge. I am satisfied that this is a topic deserving more consideration than it has as yet received from our profession. A source of more or less benefit, derived often from the so-called mineral springs and artificial waters, seems to me to have been overlooked; namely, the usefulness of simple water ingested in considerable or large quantity. Undoubtedly much of the benefit which is received by those who drink mineral waters at the watering-places is attributable to change of scene, relaxation, the expectation of improved health, freedom from business and other cares, together with sanitary advantages pertaining to climate, regimen, and diet. But aside from these it is fair to attribute something, and perhaps not a little, to the drinking of the waters. It is evidence of this that mineral waters brought from the springs and those artificially prepared are often beneficial to those who remain at home. That the benefit may be due, measurably or chiefly, to the water and not to medicinal constituents is shown by the fact that some waters supposed to possess extraordinary remedial potency have no medicinal constituents. The Missisquoi water, a few years

since famous for the cure of cancerous and other affections, was analyzed by Squibb, and found to be only remarkably pure water. In not a few of the waters which have acquired a popular repute the saline ingredients are either without effect or their effect must be insignificant; pure water substituted would do quite as well, if not better. If this be so, it is well to consider if medical practice might not with advantage avail itself more than is now done of the remedial agency of the internal use of water. And in connection with this topic the importance of the purity of water suggests itself, to which I allude merely to raise the inquiry whether the introduction of distilled water for drinking and culinary purposes might not be a wise measure in both a sanitary and a therapeutical point of view. In this essay I can do no more than to raise the inquiry.

In cases of renal disease, when an object of treatment is to promote the secretion of urine, water used internally may sometimes prove a truly potential remedy. I shall close this essay with an account of a remarkable case which seemed to substantiate this opinion.

A young woman was confined in Bellevue Hospital in May, 1873. Metritis followed the confinement, and when recovering from this affection, after an exposure to cold, acute tubal nephritis occurred. The urine was greatly albuminous and bloody, vomiting was a prominent symptom, her vision was affected, she became delirious, and had a long and violent convulsion. She was purged with elaterium, the hot-air bath was employed, and morphia injected hypodermically. These measures arrested the immediate danger from uræmia. The vomiting, however, persisted, and the irritability of the stomach became so great that medicine could not be administered by the mouth. The urine was quite scanty (twenty-four ounces in the twenty-four hours); it was bloody, and the specific gravity was 1002. She suffered much from headache, and a return of the convulsions was hourly expected. Under these

circumstances Dr. Jas. L. Perry, of this city, then one of the house physicians of Bellevue Hospital, originated and superintended the following plan of treatment: water and milk were given alternately in a very small quantity at a time, and repeated at intervals of a few moments, a definite amount (four ounces) being given every hour. In twenty-four hours the quantity of urine was increased to sixty-four ounces, the next day the quantity was seventy-four ounces, and the next day one hundred ounces. On the second day the specific gravity was 1003, on the third day 1006, on the fourth day 1008, and in a few days 1010. The blood at once disappeared, and in a few days there was no albumen. With these favorable changes in the urine there was improvement in all the symptoms. After a few days the stomach tolerated solid food, and she was able to take tonic remedies. In three weeks she was free from any evidence of renal disease; the urine was normal in quantity and specific gravity; she suffered only from anæmia and debility; and she was subsequently discharged well.

This account is not given from recollection; it is a synopsis of the history recorded fully and furnished by Dr. Perry. The facts of the case seem to warrant the belief that the patient's life may have been saved by so simple a measure as the internal use of water.

NEW YORK.

A RARE CAUSE OF ANAL FISTULA.

BY T. J. HOPPEL, M. D.

On November 23, 1873, together with Dr. Shackelford, I saw Mr. W., of this place, aged sixty-eight years. We found the whole perinæum of a dusky-red hue, doughy feel, and fluctuating in one or two places. An incision was made on

each side of the raphé, followed by a discharge of ichorous pus. Ordered warm fomentations and poultices, predicting that an anal fistula would be the result. We saw nothing more of the case till January 13, 1874, when an examination revealed two fistulæ, one on either side of the raphé, half way between the anus and scrotum. On the right side the probe passed anteriorly about two inches along the scrotum, and posteriorly to the right side of the anus. The patient, being unwilling to take chloroform, was operated on without it by the knife. The grooved director met with some resistance when carried up on the right side, imparting the feel as of a gritty, hard substance, the outlines of which seemed to be conical, with quite a large base. The sinuses being freely incised and the hemorrhage very slight, the parts were packed with oakum, and a course of tonics ordered.

Two days after the patient was sitting up, free from fever. A very small quantity of thin pus is discharging from the scrotal extremity of the track. In the apex of the sinus along the rectum is the same rough, gritty feel to the probe. The oakum is to be packed in night and morning.

January 18th — Patient walking about the house. I now found with the probe and removed a bone about an inch and a half in length and two lines or less in diameter, one end resting in the rectum. This end presented an articular surface; the other was rough, jagged, and pointed, as if it had been broken obliquely; but I was unable to make out to what animal it belonged.

January 23d — The incision is much more healthy, and suppurating through its whole extent. The track along the rectum is filling rapidly. Directed quinine, and dismissed the patient as cured early in February. Some months after all signs of the fistula, except the cicatrices, had disappeared.

TRENTON, TENN.

RELAXATION OF THE PELVIC SYMPHYSES.

BY LEVIN J. WOOLLEN, M. D.

Mrs. T., aged nineteen years, of nervo-sanguine temperament, and of plethoric habit, was confined ten months after marriage. She was threatened with abortion about the sixth month, but under treatment passed the crisis and went to full term. Three weeks before confinement she was tormented with pruritus of the vulva, which was relieved somewhat by a local application of a mixture of glycerine, carbolic acid, and fluid extract of belladonna. There were considerable puffiness and œdema of the external organs of generation, and the pruritus at times was so severe as to nearly distract her. About the seventh month there was considerable swelling of the lower extremities and at times severe headache. I suspected the existence of albuminuria, but examination of the urine proved no albumen present. Under treatment the extremities resumed their normal condition before labor commenced. The labor was painful, somewhat protracted, and called for chloroform for several hours before its completion. The head descended into the pelvic excavation without difficulty, but at the lower strait it was arrested for several hours, which, together with the unsatisfactory condition of the patient, so enfeebled the child that it died eighteen hours after birth. Its death so affected the mother as to render her condition for a few hours quite alarming.

About the fourteenth day after confinement the patient asked if she could leave her bed and sit up. I found her complaining of pain in the lower part of the abdomen and along the spine, with numbness of the lower extremities. Pressure over the symphysis pubis caused pain; and yet such pressure, when she got upon her feet and attempted to walk, was necessary to enable her to move her limb. Locomotion

was extremely painful, and when she stood upon one foot the body was greatly bent toward that side. I readily concluded that my patient was suffering from relaxation of the symphysis pubis, and directed her to wear a bandage tightly pinned around her hips. In a few days I ascertained that the bandage was of but little benefit, and that she could walk no better than before. I found the bandage was not properly applied, being only about four or five inches in breadth. I directed a bandage wide enough to reach from one inch above the crest of the ilium to an inch or two below the trochanters, and to pin it tightly, especially at the upper margin; also two perineal bands to pass from the back part of the bandage on each side, down between the limbs, and to be pinned in front near the crest of the ilium. After this my patient suffered little inconvenience and made a rapid recovery.

Relaxation of the symphyses often passes unrecognized by the physician. In many cases the patient is supposed to suffer from a slight form of metritis. It may also be mistaken for irritation of the spinal cord.

With regard to the causes of relaxation of the symphyses physicians are not agreed. Some think that it is prone to occur in women with small pelves who give birth to large children; others say that it is usually met with in persons who have roomy pelves. In my own case the pelvis, though large, was contracted at its inferior strait, and I suspect that this condition quite often obtains. Barker speaks of serous infiltration as producing relaxation and softening of the articular cartilages. In my case there was inveterate pruritus with serous effusion in those parts visible to the eye. I therefore conclude that the leading causes are, first, the effects of the serous effusion, softening and weakness of the articular cartilages; and second, pressure caused by the child's head, which, having passed almost unobstructedly into the pelvic excavation, and meeting with great resistance at the inferior strait, causes the symphyses to separate. Relaxation may occur

either at the sacro-iliac or pubic symphyses. I believe, however, that the pubic symphysis is most frequently the seat of the affection.

With regard to the diagnosis, the patient's inability to stand on both feet, while the weight of the body can be borne for a short time by one limb—the body being bent toward that side—is perhaps pathognomonic. Great stress is laid upon the necessity of having the patient assume the recumbent posture; then by placing one hand upon the symphysis pubis, and with the other seizing the limb and flexing and extending it, the bone will be felt to move at the symphysis. "To investigate the sacro-iliac joint, seize the cristæ ilii with both hands, and get the patient to walk, either with or without help. At each step the ilium of the affected side is felt to be shoved upward, while that of the other side stands considerably lower." Trousseau attaches some importance to the absence of numbness of the limbs as excluding disease of the spinal cord. In the case now reported there was marked numbness of the lower limbs, but no other evidence of spinal disease. Trousseau says, "In consequence of the existence of the puerperal state inflammation may complicate post-partum loosening of the pelvic symphyses, and lead to death." He then details two cases where suppurative inflammation attacked the symphyses, in both of which the hips became œdematous, and fluctuation being detected the matter was evacuated with a bistoury. One case was lost sight of, the other ended in death. Barker mentions several cases where suppuration occurred at the affected joint, and abscesses at various points. "The diagnosis is not difficult. In distinguishing between it and simple relaxation it should be borne in mind that, in consequence of the inflamed condition of the symphyses, the difficulty of walking stands in direct relation to the intensity of the pains, and that in general the patient has more control over the lower limbs in consequence of the bones being still held in place by the inflamed cartilages, and

especially does this hold good when the inflammation is confined to one symphysis. The vaginal touch, the imposition of the hand upon the affected parts during movement of the patient, and the probe after evacuation of abscesses will be found sufficient to establish a diagnosis."

The treatment of the simple form of relaxation of the pelvic symphyses consists in the proper application of a hip-bandage. In applying the bandage care should be taken to have it broad enough to reach a little above the crest of the ilium. This will serve, if the bandage is tightly fastened, to *fix* the bandage at its upper border; then the lower edge should embrace the trochanters. Two perineal bands should be used, each one passing over the groin in front and at a corresponding point behind. Sometimes the surface of the body embraced by the bandage will be excessively tender at certain points, so that the bandage can not be tightened with comfort. This was the case with my patient, and I remedied the trouble by interposing cotton-batting between the bandage and the body. After properly applying the bandage it is not necessary that the patient should remain in bed; indeed Dr. Barker believes that the recovery is expedited by the patient taking a moderate amount of exercise.

VEVAY, IND.

Reviews.

Therapeutics and Materia Medica. A Systematic Treatise on the Action and Uses of Medicinal Agents, including their Description and History. By ALFRED STILLÉ, M. D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania; Physician to St. Joseph's Hospital, etc. Philadelphia: Henry C. Lea. 1874.

This is the fourth edition of this learned treatise, which has been so much enlarged and so thoroughly revised that it has claims to be considered a new work. The former editions were received by the profession with so much favor that there can be no doubt as to the success of this. As it is now presented to its readers, the treatise, in its two ample volumes of nearly a thousand pages each, constitutes a treasury of knowledge relating to drugs and their application to disease which in the present state of medical science it would not be easy profitably to enlarge. All that the student could wish to learn of materia medica is related, and the discussion of therapeutics is full and able. We are glad to have the opportunity at the beginning of a new year of bringing before our readers a work which we can so heartily indorse as every way worthy of their patronage. We point to it with pride as a work which in research, in learning, in sound judgment, and the scholarly grace of its style will compare favorably with any similar treatise in any language.

In his introduction Dr. Stillé, among other interesting topics, discusses the sources of knowledge and the limits of power in therapeutics; the sources of knowledge respecting the action of medicines, their physiological action, absorption,

the curative action of medicines, the influences modifying their effects, and the art of prescribing. Under the head of absorption he states some facts which will be new to many readers. It is the general belief that medicines administered by the rectum must be used in much larger doses than when given by the mouth. Some writers teach that it must be two or three times, and others even five times larger; but from investigations made by Savory it appears that the absorbing powers of the stomach hardly exceed those of the rectum, and that consequently there is risk in the administration of such doses, especially of narcotic medicines. Strychnine acts even more energetically through the rectum than by the stomach, and most physicians who have prescribed enemata of laudanum must have been struck with the promptness and energy with which the opiate acted. It would doubtless be good practice to employ medicines oftener than we do by the rectum, but the facts cited by Dr. Stillé suggest a cautious use of powerful medicines in the form of enemata.

The hypodermic method of introducing medicines, it is claimed, has the advantage over all others of being more prompt and certain; but this has been disputed. Quinine, at least, thus employed has been found to be as long as thirty-five minutes producing its effects in some cases, while in the rectum it is absorbed in from ten to forty-five minutes. So that as to promptness and activity the difference between the areolar tissue and the rectum, as remarked by Dr. Stephen Rogers in the New York Medical Journal, is practically nothing; and, considering the fatal results which have sometimes attended hypodermic injections, we are glad to observe a subsidence of the rage for them which a few years ago had possession of the professional mind. Great numbers of practitioners have given up the operation and laid aside their syringes. They see, as Dr. Rogers remarks, "that disease can be treated quite as successfully, and at less risk of doing irreparable harm, without it, though they have occasion to

deplore the loss of the *éclat* which the flourish of instruments and the production of pain were wont to bring them."

The prominent feature of Dr. Stillé's great work is sound, good sense. It is learned, but its learning is of inferior value compared with the discriminating judgment which is shown by its author in the discussion of his subjects, and which renders it a trustworthy guide in the sick-room. The art of prescribing is mentioned in it, but no attempt is made to reduce such knowledge to written rules. He is the successful practitioner who possesses diagnostic skill and is furnished with an ample supply of prescriptions; and at the same time has the tact to apply the appropriate means not only to the "permanent morbid element," but to "every subordinate derangement," and thus influence every function in a way "to concur in the prime object of bringing the disease to a safe termination." But this is a knowledge hardly to be acquired from books. As remarked by Dr. Stillé, "It is the result in most cases of long practice by a man whom nature has fitted for its attainment. Few physicians are so highly endowed. It can only be communicated to pupils by a skillful teacher in daily or still more frequent visits at the bedside of the sick."

This treatise, if it has not already taken the place of Pereira's learned volumes on materia medica, must ultimately supersede that elaborate work, as having all its learning, and being at the same time more practical and more fully up with the therapeutics of the day. It constitutes a sort of encyclopedia on the subject, and is issued in a style as to paper and binding suitable for a book likely to be so constantly referred to.

The Sphygmograph: Its Physiological and Pathological Indications. By EDGAR A. HOLDEN, A. M., M. D. Philadelphia: Lindsay & Blakiston. 1874.

Dr. Holden won with the essay bearing the above title the "Stephens Triennial Prize" for April, 1873, and now, with

some slight modifications, reproduces it in neat book-form, profusely illustrated. The preparation of the work evidently cost its author much time and labor, and it certainly well deserved a prize; but after giving it a careful reading we reluctantly confess to being unable to discover wherein it has either advanced our knowledge of the arterial circulation or simplified its study. The sphygmograph which Dr. Holden has invented is not only not a superior instrument to Marey's as it is now sold, but in our judgment is much inferior to it. The tracings with such an instrument must from its very construction, it seems to us, lack that distinctness and uniformity which are so essential in estimating the value of the pulse-waves. In proof of this we need but refer to the hundreds of tracings given by our author, taken by his instrument, in nearly every one of which the defects we have mentioned are but too manifest.

The teachings of the sphygmograph, whether interpreted by Dr. Sanderson or Dr. Holden, have not thus far, we think, been all that could be desired; and unless some one will construct an instrument far handier, simpler, and less expensive than those now in the market, and simplify the study of the subject as well, we predict that pulse-writing will not soon come into general use among practitioners.

A Conspectus of the Medical Sciences: Comprising Manuals of Anatomy, Physiology, Chemistry, Materia Medica, Practice of Medicine, Surgery, and Obstetrics. For the use of Students. By HENRY HARTSHORNE, A. M., M. D., Professor of Hygiene in the University of Pennsylvania, etc. Philadelphia: Henry C. Lea. 1874.

The title of the above work sufficiently indicates its scope and purpose. As a conspectus it is clearly the best now within reach of the student, and under the present system

of medical lectures it really would seem to be a necessity to him.

There are those, we are aware, who deny the use of such works, and even sneer at persons who may honestly say a kindly word of them. *The conspectus and the compend are a natural outgrowth of the present American system of medical education.* Until this is changed the average student will be forced to resort to some extra means to keep up in his classes, and none so easy as that afforded by the kind of work under consideration. He will naturally avail himself of it, and the sale of the conspectus will still continue. There seems to us but one way out of the evil, and that is through a total change in the present plan of medical teaching. The schools must allign themselves with Harvard, and resolutely imitate her example. Then, and not till then, will the voice of the conspectus cease to be heard in the land; and the student no longer needing it, the occupation of its maker will be gone. The course pursued in Harvard, and that course alone, leads away from this class of works and tends to make its men thorough. The course in the other schools drives the student straight into the embrace of the conspectus, and, unless he be uncommonly strong, tends to make him a smatterer.

Of this particular conspectus we can truly say it is a complete review of "the indispensable elements of a course of medical study as taught in the colleges," brought very fully down to the present time. The name of its publisher is a sufficient guaranty of the excellence of its make-up.

The Drift of Medical Philosophy. An Essay by D. A. Gorton, M. D. Philadelphia: J. B. Lippincott & Co. 1875.

We had occasion some time ago to notice a little work by Dr. Gorton on Mental Hygiene, and to advert to its singular mixture of truth and error. This essay is characterized by

the same merits and defects. It contains much truth, but is disfigured by an amount of absurdity which would weigh down a much larger and more substantial volume. The author sets out with the unquestioned truth that mental obliquities are due to bad organization, and concludes by recommending *sulphur* as a cure for obstinate contumacy. He would treat all perversities of temper by drugs. Arsenic he has found a remedy for drunkenness, and nux vomica for maliciousness. With sepia he cures licentiousness, and with stramonium cowardice! We wonder if Dr. Gorton did not rush into the streets crying *eureka* when he made these wonderful discoveries? How they will increase practice when they come to be generally recognized! The doctor will then be sent for to treat peevish children, as well as hysterical mothers and drunken fathers. Men of timid dispositions will go to him instead of the bottle for artificial courage, and those who are "burdened with piety" will seek relief in pulsatilla!

But as in some sort an offset to this stuff Dr. Gorton, who is a homeopathist, lets in some light upon the follies of his system, and announces that his brethren are split up into warring factions. The grains of truth on this subject scattered over the concluding pages alone render this essay worthy of notice. The author has the sense to perceive and the candor to admit that the drift of medical philosophy is not to the system of infinitesimals and *similia a similibus.* It may be that his admissions on this point and his account of the ridiculous blunders of his brother homeopathists will atone with the reader in some degree for the nonsense running through the greater part of the essay.

Clinic of the Month.

On the Treatment of Diphtheria. — Having recently received from subscribers letters asking "what is the best treatment for diphtheria?" we surrender much of the space devoted to *Clinic* to extracts from the article on "Diphtheria," by Dr. Oertel, in Ziemssen's Cyclopedia, a work noticed at length in our last issue. It may here be remarked that Dr. O. is perhaps the highest living authority on this subject.

"*General Treatment.*—The treatment of diphtheria by internal remedies is based upon the same principles as those which guide the administration of internal remedies in other infectious diseases. As we possess no remedies which act directly to destroy or restrain the disease, or the virulent poison which causes it, we resort only at the present time to those agents which meet the existing indications.

"For this purpose therefore cooling and antifebrile remedies should be chiefly given during the commencement of the sickness; these are, for instance, the mineral acids, dilute hydrochloric and phosphoric acids, and solutions of the sulphate or the muriate of quinine in doses proportioned to the age of the patient and the vigor of the symptoms. If gastric symptoms usher in the disease, we can best quiet these by the administration of remedies containing carbonic-acid gas, such as the effervescing draughts and various mineral waters. Where exhausting diarrhea exists we must combat it energetically at once, employing for this purpose, according to the intensity of the trouble, oily and mucilaginous substances in combination with varying doses of opium, or solutions of tannin, alum, nitrate of silver, etc. If on the second or third

day the fever diminishes, and all complications have been successfully brought under control, our best plan is to wait, and not to resume active interference until new and then generally alarming symptoms develop.

"In some cases already on the third or fourth day an alarming diminution of the patient's strength is observed; under these circumstances we must give the preference to excitant remedies. When the pulse becomes frequent and lacking in force, and the heart-sounds are feeble and indistinct, we may resort to the use of quinine in large doses (from eight to fifteen grains); and should this succeed in strengthening the heart's action—which, alas! is very rarely the case—we may then change to other tonic remedies. Still even quinine may be continued for some time with advantage as a tonic, if administered in small doses of from three to four and a half grains in the course of the day. The stronger wines and nourishing diet, in the form of concentrated meat-broths, soups to which the yelks of eggs have been added, tea, and coffee, will also be found indispensable adjuncts. If under this treatment the patient does not recuperate, we may expect soon to see a still further depression of the vital forces, with indications of a pronounced sepsis, and symptoms of a fatal termination. At this point we may employ without hesitation large doses of the strongest irritants, as, for instance, sulphuric ether, Bestuscheff's tincture of iron,* and cognac, combined with the stronger wines, in the hope of exciting the feeble and irregularly-acting heart to energetic contraction. In adults sulphuric ether or Bestuscheff's tincture should not be given in smaller doses than ten drops every hour, if we expect to obtain the desired effect; and where collapse has begun to show itself the same dose, or even a larger one (from twelve to fifteen drops), should be given every half hour not only during the day, but through-

*Chloride of iron dissolved in a mixture of one measure of ether to three of alcohol. It contains one per cent of iron.—*German Ph.*

out the night, or at least the greater part of it. Even in children and young individuals, where as an exceptional thing death has not been caused by suffocation through the blocking up of the larynx and air-passages, but is, however, threatening the patient's life through septicæmia, we should not hesitate to employ these same remedies. The dose must then, of course, be reduced so as to correspond with the age of the patient and the intensity of the disease. The English recommend the administration of large doses of cognac in diphtheria under the same circumstances as those in which they have been in the habit of using it in typhus; and I have myself used it several times, with permanently good effects, giving in the course of a day to an adult from four to six ounces. Where cognac alone does not seem to agree with the patient it can be mixed with wine—Bordeaux, for instance, or Carlowitz—or with sweetened water, and given in conjunction with ether and Bestuscheff's tincture. In children it should be mixed with simple syrup or the syrup of orange-peel, in the proportion of one part of cognac to two of syrup; in this shape it is borne well.* In severe forms of pharyngeal diphtheria it will sometimes be necessary, even in children only three or four years old, to administer in the course of a day as much as an ounce or an ounce and a half of cognac; but the strong wines, such as Tokay, port-wine, and strong Bordeaux, also act powerfully upon the heart, and their use is therefore highly to be commended.

"It is extraordinary what large quantities of ether and alcoholic beverages may be taken, even by children, when the septic influence of the disease has lowered the excitability of the central organs and enfeebled the action of the heart. On the other hand, it is of course clear that if these be used prematurely and without judgment their effect may be the very reverse of what is desired; they may greatly increase

* Charles West, in the course of one day, once gave with good results nearly four ounces of cognac and an equal amount of port-wine to a child four years old.

the frequency of the pulse and the temperature of the body, they may call into existence symptoms of irritation of the brain and spinal cord, or they may induce serious disturbances of nutrition by the gastric complications which they cause. The first appreciable improvement produced by these remedies shows itself in a diminution of the frequency and a greater regularity of the pulse, together with a more natural temperature of the surface, especially noticeable at the extremities; the pulse gradually improves in quality, is fuller and stronger; the sensorium, if previously clouded, becomes clearer; and that too notwithstanding the enormous quantities taken of ether and alcohol, which under ordinary circumstances would have produced a very marked obscuration of the faculties; and finally the patient shows signs of returning strength and energy in all his functions.

"If these manifestations of improvement are followed by genuine convalescence, we should, of course, gradually exchange these stronger stimulants for tonics, like quinine, iron, and good, nourishing diet; but at first it is well not to give up the cognac and strong wines altogether. As a rule, those patients whose constitutions have been deeply affected by the poison of the disease do not recover at once. After the lapse of a short time, and generally while the urine contains albumen, secondary paralyses or other sequelæ occur, and necessitate further treatment and constant supervision on the part of the physician.

"If during the subsequent course of the disease, or even during the first few days, the patient manifests increasing signs of apathy and prostration, his pulse diminishing steadily in frequency until it reaches perhaps the rate of from forty to fifty beats in the minute, and the temperature of his body falling to a proportionate degree, it is hopeless to expect any assistance from stimulating remedies. Neither ether, musk, castor, nor camphor will prove of any avail in averting death.

"*Local Treatment.*—In the management of the diphtheritic inflammation on mucous membranes we have two objects to keep prominently before us: first, the character of the inflammation itself; secondly, the signs of reaction which precede the process of repair, the vis medicatrix naturæ.

"The diphtheritic affection of the mucous membrane is distinguished as an exudative inflammation, which may increase from a simple catarrhal exudation to the pouring out of a fibrinous effusion upon the mucous membrane, or may even lead to the mortification of the tissue itself through the amount of inflammatory products and of micrococci; at the same time the entrance of vegetable organisms into the blood and the absorption of injurious products of decomposition induce a general poisoning of the system.

"Any therapeutic procedure then which in any way involves the danger of promoting these processes will be already barred in advance. When retrogression of the pathological process takes place, and the false membranes become detached by the unaided efforts of nature, we find that this is invariably done through suppuration. The entrance of micrococci and the absorption of putrefying substances is prevented by a thick impermeable layer of pus-corpuscles, which at first infiltrate the superficial portions of the tissue, and ultimately pressing forth from it form a separating stratum of pus on the surface of the mucous membrane. The process of healing in the case of wounds which are the seat of diphtheritic infection is accomplished in the same way, as I have repeatedly demonstrated in diphtheria of the respiratory mucous membrane; the removal of dangerous matters is accomplished here too by means of suppuration."

After condemning local blood-letting and the application of ice as not only useless but as absolutely hurtful, Dr. Oertel next considers "the effort to remove the seeds of the infectious material from the mucous membranes by mechanical detachment of the pseudo-membranes, or by destroying them with

caustics or chemical solutions; and secondly, the aim to effect by astringents mainly a contraction of the inflamed mucous membrane and a limitation of the exudation.

"Now, as far as concerns the *mechanical* detachment of the pseudo-membranes as being sources of inflammation, it certainly requires only a brief reference to the pathology of the process to make evident the uselessness and danger of such an interference. It can not be enough insisted on that in diphtheria of the mouth and throat the contagious material is not confined to the false membranes, but is present throughout all the mucous membranes involved, as well as noticeably in the fluids of the mouth, in greater or less quantity. If now we attempt the mechanical detachment of the deposit, which in the beginning of the process is still quite firmly adherent, it always results in the production of small wounds of the surface of the mucous membrane, as shown by bleeding points where the individual capillaries have been torn. The possibility of an easier and considerable entrance of vegetable parasites and products of decomposition into the tissues is thus readily afforded, and, as proved experimentally, the life of the patient is put in far greater danger. The immediate result of such mechanical violence is, as a rule, the rapid reproduction of the pseudo-membranes, and at the same time they spread over a greater extent, owing to the increase of local inflammation and fibrinous exudation. But the final results where such a procedure has been resorted to are extraordinarily bad; the vast majority of patients, and where the diseased process is intense the whole of them, succumb to the infection of the general system.

"In the attempt to combat the local process by *cauterization* we meet with a state of things similar to what occurs when a simple mechanical detachment of the pseudo-membranes is attempted. This procedure was one of the earliest employed against diphtheria, and since it agreed very closely with the theoretical views held on the subject it was soon very widely

adopted. Not only is it impossible completely to annihilate the diphtheritic contagious material, even by repeated cauterization, when it has once become diffused throughout the whole buccal cavity, though every patch be never so carefully destroyed, but it is also impossible to combat the local disease by attempts to convert the specific inflammation into a simple one by these cauterizations. The immediate result of even the most prudent cauterization is always a certain degree of mechanical violence to the inflamed mucous membrane, and the more circumspectly we endeavor to destroy all the grayish-white deposits the more is the subepithelial tissue of the mucous membrane laid bare, the resulting slough failing to afford thorough protection in the way of a covering. In the cavity of the mouth, and in the mucus and saliva it contains, growths of micrococcus, as products of decomposition, are present in sufficient quantity to easily find their way into the lacerated parts of the mucous membrane, even though these be scarcely as large as a pin's head or only discernible with the microscope; and besides, the increased inflammation caused by the mechanical and chemical irritation furnishes a much more favorable soil.* I was enabled to observe these facts and prove them experimentally as long ago as 1864 and 1865. There can be no doubt then that the unfavorable results which have been attained on all sides by cauterizations, more or less energetically practiced, must put a stop to this procedure, even if in its stead we should be obliged to resort to the opposite, the purely expectant and symptomatic treatment.

"But even the attempt to dissolve the pseudo-membranes chemically will prove practically valuable only so far as it can widen the space encroached upon by the membranes. But the danger of suffocation is scarcely to be feared when the throat alone is affected, however thick the membranous deposits may be, but only when the larynx and trachea are involved at the same time, and when, owing to the encroach-

* Compare *Aertzl. Intell.-Bl.* 2868. No. 31.

ment of the membranes, it becomes of vital consequence to remove them. With regard to the affection of the mucous membrane itself, as well in the case of the mouth and throat as in that of the other air-passages, the solution of the false membranes by chemical means can not, as I have shown, have the least influence so long as the inflammation itself is not subdued. After dissolving the pseudo-membranes a new fibrinous exudation takes place, a second one forms, and even sometimes a third, without the treatment having gained any advance upon the disease. It is a necessary condition for improvement that after the removal of the false membranes the exudation also should cease, and a corresponding reaction, with energetic production of pus and new formation of cells, should take place upon the mucous membrane, which has been deprived of its epithelium and perhaps too of the uppermost of its layers of connective tissue. The danger too of a general systemic infection is just as little diminished by the chemical detachment of the pseudo-membranes as by the mechanical; and besides, in the former case the possibility of the introduction of masses of micrococcus and of decomposing substances into the mucous membrane, already laid bare and deprived of its epithelium, is greatly increased; the vegetable parasites and products of decomposition present in the mouth and pharynx are just as little destroyed by the chemical agents used for dissolving the membranes as by the caustics, which were formerly employed locally. When therefore it is not a question of treating a mechanical closure of the air-passages, or of averting the danger of threatening suffocation, we have no reason for using this procedure.

"Lastly, it was quite early thought possible to obtain by *astringents*, especially in the form of gargles, 'an increase of the organic cohesion of the mucosa,' and thereby to antagonize the threatened loosening and dissolving of the tissue. Without considering the theoretical notion lying at the foundation of this treatment, no diminution of the exudation on the inflamed

mucous membranes could be obtained by ever so energetic an employment of these means; but, on the contrary, through the irritation caused by these articles, an increase of the inflammation would be occasioned and kept up. Just the same conditions obtain here as in exudative inflammations in other mucous membranes; if an energetic treatment with astringents is employed in the acute stage, we have as a result an increase of the diseased process. But even supposing it possible to obtain a diminution of the fibrinous exudation by such means, still nothing would be gained in this way toward the cure of the processes of inflammation and decomposition in the mucous membranes. Neither does it affect the detachment of the pseudo-membranes and destruction of the masses of micrococcus, since these, unless nature interposes a boundary by the formation of pus, may continue to grow unmolested within the tissues; nor is a stop thereby put to the decomposition of pathological products and the possible formation of injurious substances in the mouth and throat. Finally, as concerns the statistics of the empirical results, they do not testify in favor of the curative action of these remedies, since the astringents have proved themselves completely useless in every important case; and in the great number of cases which run an easy course, and are confined to a local manifestation, the favorable results are capable of an entirely different explanation.

"In contrast to these various methods of limiting the further progress of diphtheria by antiphlogistic, caustic, astringent, and similar means, the intent of which is to combat the inflammatory reaction of the mucous membrane caused by the fungi, is the effort which has been made to excite energetically a rapid and abundant production of pus. I endeavored to solve this problem by the employment of moist warmth, in the form of hot vapor, by means of which a temperature of from 113° to 122° F. was kept up for a considerable time in the mouth of the patient, and I could at once determine the

appearances of reaction due to the attempt; viz., an abundant suppuration, causing demarkation.

"The first appearances which are observed as a result of the operation of hot vapor are always constant, and distinctly noticeable as early as at the end of from twelve to eighteen hours, during which the inhalation has been practiced hourly or half-hourly for a quarter of an hour at a time; but these effects will be developed more slowly if a considerable fibrinous exudation, with partial decomposition of the pseudo-membranes, has already taken place, and the capacity for reaction of the tissues is almost extinguished; or they will not be induced at all where the process has already run into septicæmia. The margins of the diphtheritic deposits, which generally pass imperceptibly into the surrounding tissues, become more sharply defined, and contrast strikingly with the intensely-reddened mucous membrane. The membranes therefore at the first glance seem enlarged. In some places too it will appear as if new membranes had formed where before there had been none. This is due to the fact that they had previously escaped notice from their small size, and from the presence of mucus, which concealed their outlines. Thus it will appear as if the disease had increased in intensity. The operation of the hot vapor, however, has been to induce a considerable excretion of pus-corpuscles, and these have infiltrated the epithelium, or its delicate network, which was already infected and grown full of micrococci. Under longer continued operation of the hot steam soon no further enlargement of the patches will be noticed. The pseudo-membranes become gradually thicker, and are raised up from the mucous membrane; their whitish-gray color becomes more yellowish or of a dirty gray, and their surfaces wrinkled and uneven, while the redness of the adjacent mucous membrane also fades and the swelling disappears. After some days we obtain with the necessary amount of suppuration a complete detachment of the pseudo-membranes, and they are expectorated

by the patient, either whole or in single, scarcely noticeable fragments, or are possibly in part swallowed. The thickness of such members, as a rule, never amounts to less than two mm.

"In the application of the hot vapor an ordinary broad pot, with boiling water or infusion of mallows, can be used, from which the vapor as it forms is conducted through a suitable funnel, as hot and abundant as possible, into the mouth of the patient; or, if we prefer it, we may use an apparatus which is expressly made for such purposes. This apparatus, which I have used for several years, wonderfully facilitates the employment of hot vapor, especially with children. The wide conducting-tube is simply placed in front of the open mouth, or is allowed to be taken into the mouth itself, and a uniform development and introduction of the hot vapor is thus secured. With this apparatus we can at the same time accomplish a thorough cleansing of the cavity of the mouth and throat from mucus and the fluids of the mouth, by employing a fluid which dissolves the mucus, but which at the same time acts indifferently on the organism. Such a fluid, steadily flowing over the mucous membrane, washes away masses of mucus, remnants of food, and other products of decomposition. We can also use suitable weak solutions of chloride of sodium, or chlorate of potash or other alkalies; only we must avoid strong disinfecting substances, such as carbolic acid or permanganate of potash, because after long-continued inhalation more or less of these substances is always carried into the bronchi, and may produce symptoms of irritation.

"Solutions of common salt or chlorate of potash, if this latter be preferred, of the strength of from ten to fifteen grains to the ounce, produce no injurious effect upon the organism; that is, they act perfectly indifferently when so used; and a long series of forced experiments, such as are not usually carried out in practice, never resulted in an affection of the

bronchi or of the lungs. How long these operations should last, and how often they should be repeated, must be determined by the degree of the affection; and it should not be forgotten that the shorter we make the sittings and the longer the intervals, so much the more slow and uncertain we find the reaction, while the disease thereby gains in intensity and extent. If therefore we aim at producing a rapid and free suppuration, the inhalations must be practiced as often and as long as possible, in quarter-hour sittings every half hour, and on the first and second day three or at the utmost four hours of sleep must suffice for the patient, while nourishment must be supplied in small portions in the intervals between the separate sittings. Later on, when the pseudo-membranes have been partially cast off, as well as in certain lighter cases, hourly sittings of about a quarter of an hour's duration suffice, and a longer time, six or eight hours, can be allowed for the night's rest of the patient. Even when a complete separation of the membranes has taken place, so long as a secretion of pus is still perceived at the diseased places on the surface of the mucous membrane, occasional inhalations should still be practiced every two or three hours, and these are also finally to be suspended after the cleansing of the mouth and throat is complete. By employing the atomizing apparatus a cleansing of the mouth and throat can also be combined with the inhalations. If a simpler mechanism is employed, these cavities will have to be kept clear of the accumulated masses by industrious washing and syringing. Disinfection and destruction of the micrococcus growths, of the products of infection and decomposition, will not, of course, be attained thereby.

"*Prevention of Septic Disease and General Systemic Poisoning.*—We possess no method of completely disinfecting the diseased organs. It follows from our investigations into the treatment of the local inflammation that it is impossible to annihilate the diphtheritic contagious material completely by

mechanical removal of the deposits from the mouth and throat, or by destruction of them with caustics. Another way in which the objections inherent in these methods may be overcome is one which has long been a favorite in therapeutics; viz., to destroy, by industrious gargling and rinsing of the diseased cavities, the septic ferments and the substances which have entered upon decomposition and are acting as poisons. A glance at the history of diphtheria and its treatment shows that attempts of this kind have at no time been wanting. The most usual remedies for counteracting, as far as may be, the fungous growths and the progressive decomposition, and for limiting their entrance into the tissues and their absorption, are pre-eminently spirits of wine and diluted chlorine-water, in the proportion of one to three; in the next place, solutions of carbolic acid or permanganate of potash, one or two grains to the ounce; besides these medicaments, solutions of hypochlorite of soda, forty grains to the ounce, and of hyposulphite of soda, twenty-two grains to the ounce, and the crude flowers of sulphur, are also esteemed for the same object.

"The most suitable remedies then to meet the indication of opposing septic infection and general poisoning of the system successfully are, on the basis of experimental investigation, alcohol, freshly-prepared and properly-diluted chlorine-water (containing fifteen to thirty per cent of chlorine-water), solutions of permanganate of potash, one and a half to two and a half grains to the ounce, and of carbolic acid, two and a half grains to the ounce, or where this can not be borne, a like solution of oil of thyme in equal parts of spirits of wine and water. Since these substances, on account of their concentration, are not suited for inhalations, in which a certain portion is always liable to reach the lungs and occasion symptoms of irritation, they will most judiciously be used as gargles. With these the patient has to rinse his mouth once or twice at least every hour, or where this is not easily

possible, as in the case of small children, we must seek to cleanse the mouth and throat by the use of the syringe.

"But rational and promising as this antiseptic and disinfecting method appears, still we must never lose sight of two points; viz., that by these means *no limits* are set to *the inflammation* and *exudation* on the mucous membranes; on the contrary, possibly even an increase of these may be induced; then, in the second place, that, owing to the fact that these *fluids only occasionally bathe the mouth and throat, a complete destruction* of the masses of micrococcus *can not be effected;* for they grow not only in the thick, brawn-like deposits, but they may have already gained entrance into the tissues of the mucous membrane and into the serous canaliculi and lymphatic vessels. We can not then procure a complete destruction of these parasites by any one of the gargles which have hitherto been available, unless we are willing at the same time to cauterize destructively both the healthy and diseased mucous membrane, with all the results already detailed.

"Empirical knowledge, gained by practice in the treatment of diphtheria with antiseptic gargles for years past, quite agrees with these results, and the various specific remedies of this kind have in no way stood the test of experience.

"There is a possibility that the organism may limit and even prevent septic disease and a general infection through the *capacity for reaction which belongs to the affected tissues.* This is also the way in which nature herself effects a cure. I have repeatedly called attention to these facts, which I have observed during several years past, and Professor Eberth, in Zürich, has expressed a similar opinion in regard to the healing of diphtheritic wounds.

"In the case of the mucous membrane deprived of its epithelium, and covered with fungous growths and inflammatory exudation, if a due reaction sets in, and the cell-formation is active, as in a diphtheritic wound, the micrococci are washed away with the pus; or in case a thick layer of

fungus has already been formed, this will be removed by a suppurative process of demarkation. Inversely, in case of slight reaction of the tissue, with rapid increase of the parasites, the suppuration which ultimately sets in will no longer suffice to check the further advance of the fungi and septic materials; that is, to prevent the local and general infection. Finally, certain individual differences in the capacity of reaction of the tissues are also severally liable to favor or retard these processes; and this very difference, to which we would call special attention, must also take a part in those cases in which the fungus can not be regarded as the only cause of suppuration.

"*To set up a rapid and abundant suppuration* will then form one of the first indications of our present task, and with this we should always combine the use of antiseptic gargles, to secure the utmost possible cleansing and disinfection of the cavities involved. By the energetic use of hot vapor this demand will be met agreeably to nature, at the same time that the separation of the pseudo-membranes is hastened by it; the micrococci are partly taken up by the rapidly-forming pus-corpuscles, and partly washed away by them, and an impermeable layer is opposed to the septic masses, until finally the false membranous layer becomes completely detached from the rapidly regenerating tissue of the mucous membrane. According to the individual peculiarity in capacity of reaction will this separation occur more or less rapidly; and it will depend upon the height the disease has already reached whether the septic affection and general poisoning can be prevented, and how far this can be done.

"The mode in which the hot vapor is to be employed to meet this indication will be the same as that which was found suitable in combating the local inflammation. The number and duration of the separate inhalations will be arranged in accordance with the intensity and extent of the local process, since the elimination of the fungi and septic materials follows

at once upon the casting off of the membranes. The longer the disease has already lasted, the greater the extent of the exudation and the more rapid its decomposition, so much the more energetically must the use of the vapor be pushed, the highest possible temperature being used, and the quarter-hour sittings following each other at intervals of half an hour. At the same time the mouth and throat must be carefully gargled or syringed out *every hour* with diluted alcohol or solutions of carbolic acid and permanganate of potash, two and a half grains to the ounce.

"Now, although the principles of the local treatment of diphtheria, as determined by pathological and physiological considerations, also generally serve as our guide in the affections of adjacent organs, still certain modifications must enter into this treatment if the diphtheritic process has occasioned a pseudo-membranous exudation on the mucous membrane of the nasal cavity, the larynx, the trachea, and the bronchi."

Injections of Ipecacuanha.—Dr. De Mussey writes to the Practitioner that in chronic dysentery, and even in common chronic diarrhea, injections of decoction of ipecacuanha into the intestines are a common practice in Peru and in some other countries of South America. He has used this remedy with success in some cases of diarrhea unchecked by other means. His formula is this: boil one drachm of ipecacuanha-root for ten minutes in five ounces of water; let it infuse for one or two hours, strain off, and make use of the decoction as an enema. Habitually this enema is wonderfully well tolerated. No painful sensation, no irritation of the bowel, attends these injections in the greater number of cases. They can be retained for several hours without any difficulty, and even occasionally with a feeling of comfort and relief.

Notes and Queries.

THE LATE DR. JENNINGS, OF NASHVILLE.—Dr. Thomas R. Jennings, whose death was announced some months ago as occurring under circumstances so painful to his friends, was a man of no ordinary mark in our profession. During a period of more than twenty years he was the leading physician of Nashville, and his talents and professional learning would have given him a high standing among the medical men of any city in our country. Besides the eminent position to which he attained as a practitioner, he was for a number of years a professor in the University of Nashville, the fame of which he helped to maintain. He was moreover at one time a popular political leader, and showed himself the peer in eloquence and statesmanship of the able men who shaped the affairs of Tennessee thirty years ago. And yet, owing to a want of taste for those associations which bring physicians prominently before the public eye, and still more to his insuperable repugnance to writing for the press on medical subjects, he was comparatively unknown to the profession of his country.

The writer of this notice met Dr. Jennings in Baltimore, a young student of medicine, attending his first course of lectures, fifty years ago; namely, in the autumn of 1824. He was attracted, like the writer, to the University of Maryland by the fame of Davidge, Potter, De Butts, and Pattison, men of diverse powers, but all able teachers, who had raised the institution to an eminence which it has hardly exceeded their day. He was a private pupil in the office of his uncle, Dr. Samuel K. Jennings, whose name was rendered familiar

to the profession in connection with a steam-bath, for which he held a patent. His father, Rev. Obadiah Jennings, D. D., was a learned Presbyterian minister, settled over a church at Washington, Pa., at the time he went to study medicine in Baltimore. The greatest care was bestowed on his education by his father, and he received the degree of A. B. in Washington College before he was seventeen years old. Few more finished scholars were to be found in the profession of our country in his day.

After taking the degree of M. D. in the University of Maryland he removed, in 1828, to Nashville with his father, who had been called to the First Presbyterian Church in that city, of which he continued to be pastor while he lived. In the spring of 1830 Dr. Jennings and the writer met again, in the Medical Society of Tennessee, which the physicians of the state had assembled at Nashville to organize. His modest, dignified bearing, and the air of refinement and intellectual culture about him, impressed most favorably all who came in contact with him, but he declined to take any active part in the business of the society. In the fall, having removed to Nashville, I found him lecturing to a small class of young lawyers and medical students on anatomy, while he was waiting for professional business. Among those whom I met at his rooms the first evening I visited them I remember, with interest, his brother-in-law, Mr. H. A. Wise, then on the eve of quitting Nashville for his old home in Virginia, where he has since taken so distinguished a part in the affairs of the nation. Dr. Jennings had given one or two courses on anatomy, and had the reputation among the physicians of the city of being a learned anatomist and an eloquent lecturer. All spoke of him as a young physician of extraordinary talents and unbounded zeal and industry in his profession. In the course of the winter an association of the professors in the University of Nashville and other literary gentlemen of the city was formed for giving a course of lectures on literary

and scientific subjects before the public. Dr. Jennings delivered two lectures of the course—one on the heart, the other on the brain; and I speak with perfect confidence when I affirm that in all the series, though some of the best scholars and most gifted men of Nashville took part in the course, none were more admired than his either for matter or the grace of their delivery. They at once raised the author with the public to the highest rank as a writer and lecturer. They combined every excellence of popular scientific discourses—spirit, taste, animation, and learning. With the demonstrations and anatomical details were mingled poetry, humor, and sentiment with a judgment and taste that delighted all hearers. I was struck with them at the time as unsurpassed by any scientific lectures I had ever heard, and I remember them still as among the happiest efforts of the kind to which I have since listened. At that time his professional duties interfered but little with his studies, and he had consequently leisure to bestow upon his lectures all the time and labor he chose and thus give to them the utmost polish. They were written out carefully and then committed to memory, so that the effect of their delivery was that of extemporaneous lecturing.

During the winter I met Dr. Jennings often and saw much of him. I have a most pleasant recollection of the evenings spent with him, when the conversation, turning generally upon literary subjects, brought out his fine colloquial powers to the greatest advantage. Later in life he is said to have grown unsocial, but at that time he took great pleasure in society. My interest in him, excited at first by his bright parts and studious turn of mind, was much enhanced by the patience with which he was awaiting the practice that was to render him independent.

On becoming connected with the medical department of Transylvania University, a year later, one of the first things I did after reaching Lexington was to speak to Prof. Dudley of Dr. Jennings as a lecturer and teacher whom I thought

it would be wise to bring into the school as demonstrator of anatomy. In venturing to express this opinion to my experienced colleague, after so brief a connection with the school, I may have been actuated unconsciously to some extent by a wish to advance my young friend, but assuredly I believed that his accession would give additional strength to the institution. Dr. Dudley, however, saw, as he thought, insuperable objections to a scheme which looked to the prosecution of practical anatomy in Lexington, where it was nearly impossible to obtain the subjects, and my suggestion was courteously but very incisively declined.

Early in 1833 cholera, which had prevailed in many of our large cities the year before, broke out with great malignity in Nashville, and with this epidemic began Dr. Jennings's prosperity. It brought him into public view as a practitioner and laid the foundation of his fortune. One of the early victims of the pestilence was Dr. James Roane, one of the most estimable of men and a physician of the greatest popularity, who added to his eminent social worth high general culture as well as large professional attainments. He was, in a word, the scientific, the scholarly physician of Nashville, and in this respect Dr. Jennings was like him, and naturally succeeded to a large share of his practice. It was not long in fact before Dr. Jennings succeeded to the chief part of his fame and influence in the city.

The position which he had waited for so long he could not afterward be tempted to abandon, but adhered faithfully to Nashville, retaining his place as leading physician of all his region of country, until wealth and declining health rendered him indifferent to professional business. When the Medical Institute of Louisville was about being organized in 1837, while he was still full of youthful ambition as a medical teacher, he might have had the chair either of anatomy or surgery in the school if he had desired it, but he declined the honor, preferring his lucrative practice to a professorship

with all its prospective advantages; and at a later period, when the success of the institute was assured and it was attracting large classes, he declined a similar offer. When the medical department of the University of Nashville was created, in 1851, it was generally expected that he would take part in the enterprise; but his name, although it had been long associated with the university in nominal connection with the chair of anatomy, did not appear in the list of professors. It is said that he was incredulous about the success of the projected school. It was affirmed at the time that he was in the habit of predicting that it would never have students enough to fill the back room of his office. But a very short experience convinced him of his great mistake, and eventually he accepted the chair of institutes of medicine and clinical practice, and was transferred to the chair of anatomy, made vacant by the death of Dr. Porter, a year or two later.

It has been stated by his colleagues that he did not rise in either chair to the height as a lecturer which the public had been taught to expect by his early efforts as a private teacher. Perhaps he had waited too long. It may be that he had lost something of the enthusiasm which imparted a charm to those efforts; or the cares of a laborious practice and the independence that follows wealth may have rendered him less anxious to please; or possibly he found it dull to lecture to medical students on anatomy or the philosophy and practice of medicine after having shared in the excitement of the political arena. How else, with his great advantages of mind and person, his finished scholarship, and his ample learning and experience in his profession, he should have failed to reach the first place as a teacher, it is difficult to understand. He seems never to have entered heartily into the interests of the school, partly perhaps because he delayed going into it until its fame was established, and partly also, no doubt, because of his engrossing practice; and he left it, after a few years, in no amiable temper with his colleagues. In fact,

before age should have begun to tell upon his vigorous frame, his friends had remarked a change in his character, which betokened the beginning of the cerebral trouble which finally ended in insanity. He became querulous, suspicious, and moody. He lost the young wife whom he had married late in life, and to whom he was tenderly attached, and not long afterward his large fortune was mostly swept away by the civil war. Under these repeated disasters his mind became clouded with melancholy, which assumed a suicidal turn. After an attempt some time ago to commit suicide in Nashville, in which he was nearly successful, he finally succeeded in putting an end to his life at Narragansett Pier, Rhode Island, on the 7th of August last, in the presence of one of his nieces, a daughter of Governor Wise, who was traveling with him on account of his health.

Dr. Jennings had an unquestioned title to mind on both his mother's and his father's side. His father was eminent among the Presbyterian ministers of the United States. He was an eloquent preacher and a keen and powerful debater. His mother, whom he resembled in features and character more than his father, was a woman of an excellent understanding; a firm, judicious mother, with a cultivated mind, who watched with assiduous care over the education of her children.

The disinclination of Dr. Jennings to write for the public has been adverted to. He has left behind him nothing to justify the great reputation he sustained among those who knew him. A few addresses published at the request of his colleagues and pupils are all that he ever gave to the world. This reserve grew not out of any lack of ability to write, for his letters and written addresses showed that he wrote with ease as well as force; but it grew rather, I think, out of his fastidiousness. He was too proud to write unless he could produce something that would compare with the best. He was not willing to repeat in another form what had been

written before, and in the press of business he found no leisure to elaborate such articles as his taste exacted. Otherwise, I am sure, he might have been known as one of the strong medical writers of America. L. P. Y.

Bloodless Operations.—In order to assist in determining whether operations done by Esmarch's method are more liable than others to be followed by excessive capillary hemorrhage, I venture to report my own experience in the use of the elastic bandage.

Case 1.—Traumatic aneurism of the brachial; tumor opened and vessel tied; capillary hemorrhage slight. University Clinic, 1874. (See American Practitioner, February, 1874.)

Case 2.—Amputation of thigh, in lower fourth, for malignant disease of leg, Shelbyville, Ky., April, 1874; the patient, Mr. Wilson, kindly placed in my hands by Dr. Slaughter. Capillary hemorrhage not noticeable; good recovery.

Case 3.—Resection of radius in a girl aged ten years, near Simpsonville, Ky., assisted by my friends, Drs. Ryan and Bishop, whose patient she was. Capillary hemorrhage insignificant; recovered in good time.

Case 4.—Amputation of leg for malignant disease of foot; Mrs. H., of Middletown, Ky., under care of Dr. Cox, July 1, No marked capillary hemorrhage; stump healed kindly.

Case 5.—Amputation in lower third of leg for disease of ankle-joint, performed on a man under my care, at my request, by Dr. W. O. Roberts, July 2, 1874, at SS. Mary and Elizabeth's Hospital. Capillary hemorrhage not unusual; good recovery.

Case 6.—Amputation in lower third of leg for compound fracture of ankle-joint, July 4, 1874, at SS. Mary and Elizabeth's Hospital. Capillary hemorrhage slight; good recovery.

Case 7.—Removal of metatarsal bone for necrosis; patient a lad from near Glasgow, Ky. University Clinic, Oct., 1874. No capillary hemorrhage; cure speedy.

Case 8.—Amputation of leg; University Clinic, Oct., 1874. Capillary hemorrhage insignificant; good recovery.

Case 9.—Trephining lower end of tibia for abscess, hospital clinic, Indianapolis, Ind., November, 1874. No capillary hemorrhage.

Case 10.—Amputation (secondary) in lower third of thigh for injury of knee-joint, City Hospital Clinic, November, 1874. No capillary hemorrhage; patient died of exhaustion on the fifth day.

Case 11.—Operation for necrosis of tibia, December, 1874, College Clinic, Indianapolis, Ind. Capillary hemorrhage slight; case progressing favorably.

Case 12.—Trephining head of tibia for abscess; Mr. Copely, at St. Joseph's Infirmary, Dec., 1874. No capillary hemorrhage; wound healing kindly.

It will thus be seen that as far as I have had an opportunity of observing parts subjected to Esmarch's bandage capillary hemorrhage has in no instance excited attention, much less caused inconvenience. I incline to the opinion that in the amputation done at Shelbyville the patient, a very old and much-enfeebled man, would probably have succumbed under any considerable loss of blood, a contingency happily saved him by Esmarch's method.

Death of Dr. Ewing.—Dr. U. E. Ewing, the oldest physician of Louisville, died of apoplexy, at his residence, on the 23d of December. For a number of years Dr. Ewing has not been engaged in practice, but he was long one of the most popular practitioners of the city. A man of strong practical sense, his influence was felt in all the business-circles of the city, as well as in the walks of his profession. He was born in Logan County, Ky., on the 23d of July, 1799, and was one of the early graduates of Transylvania University. By industry and the wise management of his affairs he accumulated an ample fortune.